What is claimed is:

1. A process of making a component of semiconductor processing equipment, the process comprising providing a liquid crystalline polymer on a surface of the component, wherein the liquid crystalline polymer forms an outermost surface of the component.

2. The process according to Claim 1, wherein the liquid crystalline polymer is plasma sprayed onto the surface of the component.

3. The process according to Claim 1, wherein the component is a plasma chamber wall, a chamber liner, a gas distribution plate, a gas ring, a pedestal, an electrostatic chuck and/or a focus ring.

4. The process according to Claim 1, wherein the component comprises a ceramic part made from alumina.

5. The process according to Claim 1, wherein the liquid crystalline polymer is a preformed sheet, the process comprising applying the preformed sheet as a covering to the surface of the component.

6. The process according to Claim 2, further comprising subjecting the surface of the component to a surface roughening treatment prior to depositing the liquid crystalline polymer coating.

7. The process for coating according to Claim 1, wherein the component comprises a metal part made from aluminum or an aluminum alloy having an anodized or non-anodized surface.

8. A component of semiconductor processing equipment, said component comprising a liquid crystalline polymer on an outer surface thereof.

9. The component according to Claim 8, wherein the liquid crystalline polymer comprises a coating on a surface of a substrate.

10. The component according to Claim 9, wherein the substrate comprises aluminum or an aluminum alloy.

11. The component according to Claim 9, wherein the substrate comprises alumina.

12. The component according to Claim 10, wherein the substrate includes an anodized or non-anodized surface.

13. The component according to Claim 9, wherein the liquid crystalline polymer comprises a plasma sprayed coating.

14. The component according to Claim 8, wherein the component is a plasma chamber wall, a chamber liner, a gas distribution plate, a gas ring, a pedestal, an electrostatic chuck and/or a focus ring.

15. The component according to Claim 8, wherein the liquid crystalline polymer comprises a preformed sheet covering a surface of a substrate.

16. The component according to Claim 13, wherein the component comprises a roughened surface in contact with the plasma sprayed coating.

17. The component according to Claim 8, wherein the liquid crystalline polymer contains a filler.

18. A plasma chamber comprising at least one component according to Claim 8.

19. A method of processing a semiconductor substrate in the plasma processing chamber of Claim 18, wherein a substrate is transferred into the chamber and an exposed surface of the substrate is processed with a plasma.

20. The method of claim 19, wherein the surface of the substrate is etched with the plasma.

21. The method of claim 20, wherein the plasma is a high-density plasma.

22. The method of claim 19, further comprising steps of:

positioning the substrate on a substrate support in the reactor;

introducing a process gas into the reactor;

applying RF energy to a planar antenna and inductively coupling the RF energy from the antenna into the chamber so as to energize the process gas and generate a plasma adjacent an exposed surface of the substrate; and

etching the exposed substrate surface with a plasma.

23. The method of claim 22, wherein the component is a gas distribution plate or ring, the method further comprising introducing the process gas into the reactor through openings in the gas distribution plate or ring.